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AUTHOR Ribordy, Sheila C.
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ABSTRACT

College students with difficulty falling asleep were treated with either progressive relaxation, systematic desensitization, or a thought control procedure. All three treatment groups showed significant lower latency to sleep onset times than a waiting-list control group at the end of the three-week treatment period. A three-week followup revealed that all three treatment groups maintained their improvement. The success of the progressive relaxation and the systematic desensitization procedures corroborates earlier evidence while the success of the thought control procedure suggests that there may be a cognitive element contributing to pre-dormitional insomnia (e.g., mind-racing, ruminations). (Author)

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Sheila C. Ribordy

De Paul University

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THOUGHT CONTROL TRAINING AS A TREATMENT FOR INSOMNIA

Sheila C. Ribordy

DePaul University

Monroe (1967) has found that "poor" sleepers are generally more physiologically aroused than "good" sleepers. Many insomniacs have also reported that after laying down intrusive thoughts emerge and these ruminations are not easily terminated (e.g., Geer & Katkin, 1966; Storms & Nisbett, 1970). Storms and Nisbett have described what they believe to be a vicious cycle in which insomniacs become entrapped. The cycle involves three stages: (1) the occurrence of symptoms, (2) worry about symptoms, and (3) consequent exacerbation of symptoms. If the cycle could be short-circuited by having the insomniac focus his attention away from worry about his symptoms, the consequent exacerbation is less likely to occur and sleep may be more easily attained.

There have been numerous studies which have shown the efficacy of progressive relaxation training and systematic desensitization in treating sleeping problems involving inability to fall asleep (e.g., Borkovec, Steinmark, & Nau, 1973; Steinmark & Borkovec, 1974). In many of these studies, insomniacs were asked to practice the relaxation procedure at home before falling asleep. Applying a relaxation procedure at bedtime might either merely serve to distract the insomniac so that the ruminations are interrupted or reduce physiological arousal. If the application of relaxation at bedtime serves only to interrupt cognitive ruminations, a distraction procedure should be equally effective at reducing sleep onset latencies.

In the present study, a distraction procedure involving thought control training was employed to investigate this question. The efficacy of three treatment groups was compared: (1) progressive relaxation training, (2) a modified systematic desensitization procedure, and (3) a thought control technique.

METHOD

Subjects. Volunteer male and female college students who (1) reported requiring thirty minutes or more to fall asleep, (2) were not taking any sleeping medication, and (3) were not seeing a professional concerning their sleeping problem were solicited to enter a treatment program. Forty-five subjects were randomly assigned within the constraints of scheduling to one of four conditions: progressive relaxation (PR), N=11; systematic desensitization (SD), N=14; thought control (TC), N=13; and waiting-list control, N=7.

Treatment. Treatment consisted of four weekly group sessions lasting 40 minutes each. Subjects completed daily sleep questionnaires which asked them to report how many minutes it had taken them to fall asleep the previous night. This questionnaire also included questions regarding total hours of sleep, number of awakenings in the middle of the night, the difficulty or ease with which one fell back asleep after waking, lightness or depth of one's sleep, waking early and not being able to fall back asleep, how rested one felt in the morning, and how satisfied one was with his sleep. The daily sleep questionnaires from the week prior to the onset of treatment served as baseline data.

Subjects in the PR group were trained in a progressive relaxation procedure modeled after one recommended by Rimm and Masters (1974) which lasted approximately 30 minutes.

Subjects in the SD group were trained with a shortened version of the same relaxation technique used in the PR group and a single-item hierarchy similar to that employed by Geer and Katkin (1966).

Subjects in the TC group were trained with an imagery procedure which involved having subjects practice imagining a variety of scenes which were predetermined to be "neutral" in affect (e.g., going to the store to buy a loaf of bread). An attempt was made to use only imagery items which were not relaxing or arousing in nature. The subjects were instructed to imagine a particular scene as vividly as possible and to concentrate on keeping the scene in mind. Between the presentation of scenes the subjects were told to erase everything from their minds and to concentrate on keeping any additional thoughts from interfering.

In line with Borkovec and Nau's (1972) concern that treatment procedures be equally credible, a credibility questionnaire was administered at the end of the first treatment session after subjects had read a treatment rationale and had actually experienced the first "treatment." In addition, an attempt was made to control for expectancy effects. All treatment subjects were given counterdemand instructions similar to those used by Steinmark and Borkovec (1974). Specifically, subjects were told not to expect noticeable improvement in their sleep behavior until after the second week.

Finally, subjects in all three groups were asked to practice their particular procedure once daily. Half the subjects were told to practice immediately before going to bed while the other half were told to practice at least three hours before going to bed. After the fourth treatment session subjects were told to apply the technique only whenever they felt it necessary. At this time all treatment subjects were given a three weeks' supply of daily questionnaires to complete over the followup period.

RESULTS

Weekly means for each of the eight dependent measures from the daily sleep questionnaire were adjusted for the corresponding mean scores from the pretreatment week by a residualization technique (Cronbach & Furby, 1970). Initial analyses indicated no effect for credibility of techniques, indicating that all subjects were approximately equal in the degree to which they believed their particular treatment procedure to be a credible, viable treatment for inability to fall asleep.

Treatment Period. Regarding the primary dependent measure, latency to sleep onset, a three-way repeated measures analysis of variance (Weeks 1, 2, 3 x Practice x Treatment) for unequal N was used. No main or interaction effects were found for the practice factor. Analysis did indicate, however, a significant Weeks x Treatments interaction ($F(4,76=2.86$, $p < .05$). Pairwise comparisons with Duncan multiple range tests revealed that in the third week of treatment all three groups were reporting significantly lower sleep onset latency scores than the control group (SD, $p < .01$; PR, $p < .05$; TC, $p < .05$). The three treatment groups did not differ significantly from one another at the third week. There were no significant differences among

the three treatment groups and the Control group at the end of the two-week counterdemand period. The adjusted weekly means for latency to sleep are shown in Table 1.

Insert Table 1 about here

Further analyses revealed no consistent significant effects for any of the other seven dependent measures collected on the daily sleep questionnaires in the three-week treatment period.

Followup Period. Ten subjects failed to complete the daily sleep questionnaires for the three-week followup period; thus the followup analyses are based on 35 subjects. There was no indication that the dropout rate was differential among the three treatment groups (PR=3, SD=4, TC=3). A two-way anova (Weeks 4, 5, 6 x Treatments) for unequal N over the followup period was performed. There was a significant Weeks x Treatment interaction ($F(4,56)=2.74$, $p < .05$). Pairwise comparisons revealed that at Week 4 and 5 all three treatment groups were continuing to report lower latency times than the Control group (all $p < .01$). By the sixth week, however, only the SD group continued to show significantly lower latencies than the Control group ($p < .01$). Although both the TC and PR groups were also reporting lower latencies than the Control group, the differences (5.60 and 5.16 minutes, respectively) were not large enough to be statistically significant (TC, $p < .10$; PR, $p > .10$). Inspection of Table 1 reveals that the lack of significant differences was not due

to the TC and PR groups regressing, but, instead, to a sudden, unexpected drop in latency times for the Control group. Indeed, an examination of weekly latency means shows that all three treatment groups had even lower latency scores at the end of the followup period than they had at the end of the treatment period. Analyses revealed no significant effects for any of the other seven dependent measures over the followup period.

DISCUSSION

The fact that there was no practice effect was unexpected. Post-experimental interviews revealed that subjects may not have been very conscientious in following the practice instructions. That is, those who were told to practice at least three hours prior to going to bed were actually applying the treatment procedure at bedtime whenever they found themselves having difficulty falling asleep, while those instructed to practice immediately before going to bed were not always diligent in doing so. If this is true, the experimental manipulation of the practice effect was essentially nullified.

There are two possible explanations for the apparent lack of positive treatment effects during the two-week counterdemand period. One is that the only active elements in all three treatment procedures were demand and expectancy effects, which would only become apparent after the counter-demand instructions had been removed. The second possible explanation is that two weeks was not a long enough period of time to allow the treatment procedures to have an impact. It seems unlikely that the first explanation is true since several studies (Borkovec, Kaloupek, & Slama, 1975; Steinmark & Borkovec, 1974) have found the progressive relaxation procedure to show significantly positive effects during a counterdemand period,

while the Steinmark and Borkovec study also indicated systematic desensitization to show similar positive effects during a counterdemand period. That the two weeks allowed in this study was not a sufficient enough time to allow effects to become apparent is more likely as both of the studies cited above used a three-week counterdemand period and the improvement was shown in the third week.

That the thought control procedure was equally as effective as both the progressive relaxation and the systematic desensitization procedures during the treatment period indicates that a significant aspect of pre-dormitional insomnia may involve mind-racing and cognitive ruminations. Because the imagery scenes used in the TC procedure were not relaxing in nature it is doubtful that this procedure was serving a relaxing function. It appears more likely that as the subject concentrated on "neutral" imagery scenes, the pattern of mind-racing and troublesome ruminations was interrupted. That the SD procedure appeared superior to both the PR and the TC procedures in showing decreased latencies over a followup period may be due to the SD technique involving a combination of relaxation and imagery exercises. One can speculate that incorporating relaxing imagery scenes into the TC procedure may further increase the potency of this treatment technique. This is especially true if pre-dormitional insomnia involves a combination of physiological arousal and cognitive ruminations.

Insomnia research is now at a point where an account of the insomniac's specific complaints must be considered. It is possible that there

are various "types" of predormitional insomnia involving different complaints (e.g., physiological arousal, cognitive ruminations) which can appear in combination or alone. If so, it would seem wise to investigate specific complaints, than apply the most appropriate techniques to those specific complaints. From a therapeutic standpoint, accurate assessment of "type" would then be a prerequisite to prescribing the most effective treatment.

TABLE 1

ADJUSTED WEEKLY MEANS FOR LATENCY TO SLEEP ONSET[a]

	WEEKS					
	Treatment Period			Followup Period		
	1	2	3	4	5	6
Progressive Relaxation	40.37	24.49	24.84	19.70	22.52	22.71
Systematic Desensitization	29.35	30.43	20.90	17.54	15.98	15.32
Thought Control	28 90	28.80	23.68	22.36	24.44	21.95
Waiting-List Control	33.36	29.92	33.06	35.19	33.94	27.11

[a]Adjusted for initial values

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